



THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

In re Patent Application of

COMBES et al

Atty. Ref.: SCS-124-1142

Serial No. 10/563,056

TC/A.U.: 2884

Filed: January 3, 2006

Examiner: C. Igyarto

For: THERMAL DETECTOR

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December 29, 2009

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Sir:

REPLY BRIEF

This Reply Brief is responsive to the Examiner's Answer mailed November 4, 2009, the date of response to which is January 4, 2010.

It is noted that, in pages 1-13, the Examiner merely restates the bases for rejection set out in the Final Rejection mailed August 19, 2008. Accordingly, Appellants believe the Appeal Brief filed in this application on April 6, 2009 fully and completely responds to each of those allegations. However, on pages 14-21 of the Examiner's Answer, the Examiner purportedly responds to the arguments in the Appeal Brief as Section 0VII, A-I, and Appellants respond to the Examiner's new points of arguments in the order set out in the Examiner's Answer with the headings set out in the Appeal Brief.

A. The Examiner fails to properly construe claims 1-23 in accordance with 35 USC §112 (6th ¶) and erroneously concludes that the claimed “mounting means” is not disclosed in the drawings or described in the specification

Beginning on page 14, the Examiner confirms that Appellants’ independent claim 1 recites structure which must be construed, in accordance with the 6th paragraph of 35 USC §112, to cover the corresponding structure in the specification and equivalents thereof.

The Examiner correctly indicates that Appellants point to the suspended portion 32 as being the claimed “supporting frame” and that the legs 43 comprise the claimed “mounting means.” Appellants’ independent claim 1 specifies that the mounting means not only provides “thermal isolation between said substrate and said supporting frame” but also is the structure for “mounting said supporting frame on a substrate.”

Inexplicably, the Examiner alleges that “the original disclosure does not provide the legs, as Appellant argues, providing the function of mounting said supporting frame (32) on a substrate (40)” (page 14, lines 15-17). Appellants’ Appeal Brief identifies that the claimed “mounting means” is shown in Figure 3 of Appellants’ specification (annotated claim 1 on page 3). Additionally, Figure 3 is also discussed on page 6, lines 20-29 of the application as originally filed.

Notwithstanding the Examiner’s suggestion that the original disclosure “does not provide the legs . . . providing the function of mounting said supporting frame on a substrate,” the cited portion on page 6 at lines 20-29 as reproduced below clearly supports Appellants’ argument and apparently has been ignored by the Examiner.

“Conveniently, the suspended portion is suspended from the underlying substrate on at least one leg. Preferably, two legs

or more than two legs are provided to support the suspended portion. Ideally, the **legs may be designed to provide a high degree of thermal isolation** between the suspended frame containing the resonator element and the substrate. The **legs** (which can also be termed suspension elements) may also be used to mechanically isolate the resonant element from the underlying substrate and/or package; i.e. the **legs** may also reduce the stress imparted to the supporting frame by the substrate. The **legs** may advantageously include conductive material to provide an electrical connection between the resonator element and the underlying substrate.”

There is no purported ambiguity about the disclosure contained in Appellants’ specification or in the related figures and there is no excuse for the Examiner’s failure to adhere to the claim construction requirements of 35 USC §112(6th paragraph).

The Examiner asks in the Examiner’s Answer in the paragraph bridging pages 14 and 15 if the “fixed metal layer 35” “provide the function of mounting the support frame.” The answer to this question is absolutely not; the cited portion of Appellants’ specification clearly indicates that it is the legs 43 which support the frame 32 above substrate 40. Item 35 is a fixed metal layer which provides electrical connection.

The Examiner alleges that “there does not appear to be a structure provided in the original disclosure that offers both functions of mounting said supporting frame on a substrate and providing thermal isolation between said substrate and said supporting frame.” Again, the Examiner need only read Appellants’ specification at the above quoted portion to understand that the legs 43 provide two functions, i.e., thermal isolation and mounting the supporting frame 32 on the substrate 40.

How or why the Examiner does not appreciate this in view of Appellants' specification and drawings is not understood. However, it appears that the Examiner does not wish to understand this disclosed, described and claimed relationship.

B. The Examiner fails to properly construe the remaining subject matter of Appellants' claim 1

The Examiner's response to heading B is somewhat confusing in that Appellants' concern is as discussed in the heading above, i.e., the Examiner fails to properly construe the remaining subject matter of Appellants' claim 1.

The Appeal Brief points out that the Examiner is ignoring the "adapted to" limitation set out in independent claim 1. Appellants pointed out that this language is specifically interpreted by the Manual of Patent Examining Procedure to be the recitation of a structural interrelationship and to "precisely define present structural attributes of interrelated components of the claimed assembly."

Notwithstanding the mandate of the MPEP, the Examiner states that "Appellant's claimed 'adapted to' limitation does not present an interrelationship between claimed structural elements, such as the example pointed to by Appellant." How or why the Examiner believes that the claim language, i.e., "supporting frame [32] is adapted to absorb infrared radiation received by the device thereby altering a resonant property of said resonator element" does not clearly require that the supporting frame be constructed and/or oriented and/or provided so as to absorb infrared radiation and alter "a resonant property of said resonator element" is not seen.

Accordingly, and in view of the above, to the extent the Examiner still disregards the language of Appellants' claim 1, this is reversible error.

The Examiner confirms his erroneous claim construction by stating "the Examiner has pointed out that an element being 'adapted to' perform a function is not a positive limitation" (Examiner's Answer page 16, lines 17-19). However, even with this apparent confirmation, the Examiner then changes his argument to suggest that he has somehow considered this limitation in his rejection of the claims and points to column 1, lines 15 and 16 and 34-36 of the Vig reference cited in the Final Official Action. Unfortunately for the Examiner's position, the cited portions of Vig merely state that "wherein the temperature changes result from absorption of radiant energy" (column 1, lines 15-16) and "highest performance temperature measuring instruments relies on methods that cause the frequency of an oscillator to vary with temperature" (column 1, lines 34-36 of Vig). These portions of Vig are not inconsistent with Appellants' claims and do not provide any basis for the Examiner's disregarding of Appellants' positively recited structural interrelationship set out in independent claim 1 and claims dependent thereon.

Accordingly, the Examiner still apparently fails to construe the language of Appellants' independent claim 1 and therefore has committed reversible error in his analysis.

C. The Examiner fails to understand the Vig reference

On page 18 of the Examiner's Answer, the Examiner now changes his argument and asks why "Appellant does not provide any explanation of why the thin film support 2 as shown in Figure 4 of Vig would not be a supporting frame" (Examiner's Answer page 16, lines 2-3). Appellant notes that column 8, lines 45-50 of the Vig reference clearly describes Figure 4 as containing a "resonator wafer 1 is supported by thin film support(s) 2 which itself is supported by sandwiching the thin film supports between electrode wafers 3 and 4."

Appellants' claim specifies that the claimed resonator element [36] is attached to a supporting frame and it is "the supporting frame is adapted to absorb infrared radiation received by the device thereby altering a resonant property of said resonator element." Quite clearly, the thin film supports 2 of Vig do not comprise a resonator frame which upon absorbing infrared radiation received by the device alters "a resonant property of said resonator element."

Moreover, the whole point of using thin film supports in the Vig reference is to allow the resonator element to resonate freely without any interference. There is no disclosure in Vig cited by the Examiner which contains any suggestion that the supporting frame (which the Examiner contends are thin film supports 2) is in any way "adapted to" (a) absorb infrared radiation (b) received by the device and (c) alter a resonant property of said resonator element.

In addition to the supporting frame adapted to absorb infrared radiation, Appellants' claim 1 requires "mounting means" for mounting the supporting frame on the

substrate and providing thermal isolation between the substrate and the supporting frame. If Vig's thin film supports 2 are the claimed "supporting frame," where is there any "mounting means for mounting said support frame on a substrate and providing thermal isolation between said substrate and said supporting frame?"

In the Vig reference Figure 4 embodiment, this would have to be the solid top and bottom electrodes 5 as stated in Vig at column 8, lines 50-52. Quite clearly, this structure is not analogous to Appellants' claimed "mounting means" and does not supply any thermal isolation.

In section C, the Examiner avoids this argument by stating that it will be subsequently addressed in section E below ("this will be further addressed in response to arguments of the *prima facie* case of anticipation or obviousness in section E below" (Examiner's Answer page 18, lines 8-10). The Examiner's failure, after being requested to identify the claimed structures in the previous prosecution of this application, is a clear indication that there are no structures in the Vig reference analogous to all of the structures recited in Appellants' independent claim 1.

Again, since the burden is on the Examiner to identify the structures which she contends disclose Appellants' claimed invention and the failure to identify such analogous structures is a clear indication of the Examiner's continuing failure to meet her burden of establishing a *prima facie* case of obviousness.

D. The Examiner errs in failing to identify where all claimed elements are disclosed in Vig or are arranged as in Vig

In response to Appellants' pointing out to the Board that the Examiner fails to identify where all claimed elements from claim 1 are disclosed in Vig or are arranged in the Vig reference is completely ignored by the Examiner.

Instead of responding and identifying where the claimed structures are contained in the Vig reference, the Examiner merely alleges that Appellants' argument do not comply with 37 CFR 1.111(c). Firstly, there is no requirement that an Appeal Brief comply with Rule 111(c). Secondly, this citation by the Examiner makes no sense at all, since 37 CFR 1.111(c) is a section of the Code of Federal Regulations which relates to a "reply by applicant or patent owner to a non-final Office Action." As indicated by the title of the MPEP section, this has nothing to do with responding to a Final Rejection and has nothing to do with any requirement of Appellants' Appeal Brief.

The Examiner's failure to respond to the point raised in section D of the Appeal Brief is particularly telling, in that Appellants have simply asked the Examiner to identify the elements which she contends are disclosed in the Vig reference and how those elements as disclosed in Vig are arranged to anticipate Appellants' independent claim or claims dependent thereon. Appellant asks the Examiner to disclose only what she has an obligation to disclose in order to set out a *prima facie* case of obviousness.

The Appeal Brief points out that both for an anticipation rejection and an obviousness rejection the burden is on the Examiner to provide evidence to support a *prima facie* case of anticipation or obviousness. The Examiner simply does not identify

any portions of the Vig reference which disclose Appellants' claim 1 structures or structural interrelationships. Accordingly, the rejections under anticipation and obviousness clearly fail and should be reversed.

It should also be understood that, in the Vig reference it is radiation absorbed by the resonator wafer 1 which changes frequency and indicates the level of absorbed radiation. In Appellants' claimed invention, it is the supporting frame which absorbs the infrared radiation. Because the resonator element 36 is fixably attached to the supporting frame 32 when the supporting frame expands or contracts based upon the level of absorbed radiation, the tension (and thereby frequency of the resonator element) will change.

The Examiner simply ignores the operational interrelationship of the elements recited in Appellants' independent claim 1 and all attempts made by Appellants (from the filing of this application in 2006 to the present) to have the Examiner indicate where she believes the claimed structures are disclosed in the cited prior art have been unsuccessful.

E. The Examiner fails to set forth a *prima facie* case of anticipation under §102 for claims 1-4, 8-14, 16, 17, 19, 20 and 23 or obviousness under §103 for claims 1-4, 8-17 and 19-23 over the Vig reference

On its face, section E in the Examiner's Answer (with the text continuing from page 19 through page 21), looks to be a reasonable analysis of the Vig reference, at least until one carefully examines the Examiner's "Annotated Figure 4 of Vig." The Examiner uses an elongated oval to surround what the Examiner purports to be the "substrate" even though this is the "bottom electrode 6" (Vig, column 8, lines 50-52). The Examiner then

obscures number 4 from identifying the lower electrode 4 and surrounds a portion of the bottom electrode 6 with a circle and a lead line indicating that the Examiner believes this is the claimed “mounting means.”

However, there is no suggestion in Vig that the extension of the bottom electrode 6 provides any “thermal isolation between said substrate and said supporting frame” as required by the Appellants claims. Further, there is no teaching in Vig that the thin film supports 2 alter any resonant property of the resonator element 1 as contended by the Examiner.

While the Examiner points to the thin film supports and those thin film supports clearly do support the resonator element 1, there is no indication that those thin film supports act in the manner of Appellants’ claimed supporting frame, i.e., “adapted to absorb infrared radiation received by the device thereby altering a resonant property of said resonator element.” The Examiner appears to simply ignore the elements specified in the claims, i.e., the claimed “supporting frame” and the claimed “mounting means.” In fact, as would be clear to one of ordinary skill in the art, even if thin film support 2 were the claimed “supporting frame,” the purported “mounting means” shown in the annotated Figure 4 is actually part of the substrate, i.e., it is clearly the vertical extension of the bottom electrode 6 as shown in Vig.

It is respectfully requested that the Board look at the original Figure 4 in the Vig reference rather than the Examiner’s annotated Figure 4 because the Examiner’s addition of the elongated oval around a portion of the bottom electrode shows an apparent seam between the lower portion of bottom electrode circled by the balloon and the vertically

extending upward portion of that same bottom electrode (which the Examiner calls the mounting means). In fact, as can be seen by the original Figure 4 of Vig, what the Examiner contends to be the “mounting means” and the “substrate” are one solid structure.

The Examiner does not explain how this single solid structure mounts what she contends is the supporting frame (thin film supports 2) on the substrate (bottom electrode 6) and provides any thermal isolation between said substrate and said supporting frame. At best, the Examiner’s mark-up of Vig’s Figure 4 is misdescriptive of what is actually taught in the Vig reference.

Furthermore, if the thin film supports are in fact the equivalent of Appellants’ claimed “supporting frame,” then they must somehow absorb infrared radiation and alter “a resonant property of said resonator element.” It will be appreciated by reviewing the portion of Vig from column 8, line 58 through column 9, line 5 demonstrating that resonators supported by only mechanical contact are “only limited by how thin and narrow the thin film supports can be.” This suggests thinner is better, but Appellants’ claim requires the supporting frame adapted to absorb infrared radiation and alter “a resonant property of said resonator element.” Thus, Vig, in teaching that the purported “supporting frame,” i.e., thin film support 2, should be as thin as possible and would make it impossible for that purported “supporting frame” to alter the resonant property of the resonator element.

Even if the support frame in Vig absorbs radiation, there is no indication that it will alter the resonant property of the resonant element which is the benefit of

Appellants' claimed combination. Even if the Examiner's contention regarding the mounting means is correct (and there is no supporting evidence), it would be clear to one of ordinary skill in the art that the purported "mounting means" disclosed in Vig does not provide any thermal isolation between the substrate and the supporting frame as required by the claims.

It is noted that in the first full paragraph on page 21, the Examiner references Clark (U.S. Patent 5,917,272), but this reference does not seem to be included in any rejection of any of the claims which are currently appealed before the Board or cited in any PTO Form 892. In fact, this reference is not even of record in this application. Notwithstanding the fact that the Clark patent is not of record, it is apparent that the Examiner improperly understands Clark.

The Clark reference teaches crystal resonator 14 which is maintained between cover 48 and base 30. A heater element 40 is located under the crystal element and serves to keep the crystal oscillator at a desired fixed temperature (it is well known that variations in temperature will vary the oscillation frequency and so the constant temperature oven maintains a highly accurate frequency of vibration). However, because of the closed container surrounding the resonator 14, it would be impossible for the resonator or its purported "supporting frame" to absorb infrared radiation and have its resonant properties altered thereby.

It is noted that purported legs 32.1 and 32.2 are non-heat conducting insulators mounting the substrate 28 above the base 30. However, there is no disclosure that what the Examiner considers to be the "frame 28" is analogous to Appellants' "supporting

frame” or that it absorbs infrared radiation or that it alters the resonant property of the resonator element.

The whole point of Appellants’ invention is the “detecting infrared radiation” whereas the whole point of Clark is to thermally isolate and maintain a constant oscillation frequency of the resonator element. The two have nothing in common, other than perhaps an electrical oscillator. In any event, the Clark reference is not of record in this application and how or why the Examiner believes she needs to rely upon this reference is not seen. However, even if considered by the Board, it is not pertinent for the reasons noted above.

Appeal Brief Sections F-I

The Examiner does not provide any rebuttal of the points raised in the Appeal Brief sections F-I which deal with further combinations of the primary reference Vig and various secondary references. It is noted that the Appeal Brief points out that none of the secondary references disclose the features missing in the primary Vig reference and the Examiner does not appear to take issue with this conclusion.

Accordingly, there is no need to address the arguments F-I in the Appeal Brief.

CONCLUSION

While the Examiner has had ample opportunity to demonstrate how or why she believes the structures disclosed in the Vig reference are the functional equivalent of structures recited in Appellants’ claims, she has failed to do so. Instead, she has ignored the structural interrelationships of elements recited in Appellants’ independent claim in

order to attempt to “read” the Vig reference onto Appellants’ claims. As can be seen by her Annotated Figure, the Vig reference simply does not support her reading and thus the Examiner is forced to conclude that the thin film supports 2 of Vig are in fact the claimed “supporting frame.” Having made that conclusion, she doesn’t indicate how the thin films could absorb infrared radiation and thereby “alter a resonant property of said resonator element.”

In order to read the Vig reference onto the claimed “mounting means,” she is forced to alter Vig’s Figure 4 to illustrate the bottom electrode 6 as being two different structures, the lower one being the claimed “substrate” and the upper one being the claimed “mounting means” for mounting the supporting frame on the substrate and for “providing thermal isolation between said substrate and said supporting frame.” There is simply no disclosure in the Vig reference supporting the Examiner’s construction and theories of operation and thus the Examiner fails to meet the requirements of 35 USC §102 and §103, i.e., demonstrating that the cited prior art discloses each claimed element interrelated as in the claims.

As a result of the above detailed discussion, there is simply no support for the rejections of Appellants’ independent claim or claims dependent thereon under 35 USC §112, §102 and §103. Thus, and in view of the above, the rejection of claims 1-23 under 35 USC §112, §112 and §103 is clearly in error and reversal thereof by this Honorable Board is respectfully requested.

Because the Examiner has not taken the time to set out a *prima facie* case of either anticipation or obviousness, Appellant does not believe it necessary to undertake the

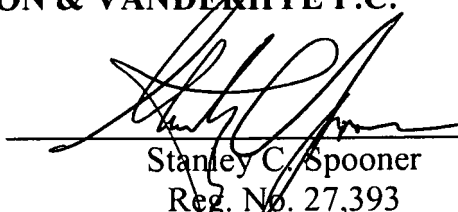
expense or take up the Board's time to request and attend an Oral Hearing in this case.

Accordingly an expedited consideration of this Appeal is respectfully requested.

Respectfully submitted,

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